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CHARLES DARWIN<sup>1</sup>

V.

THE effects upon Psychology of Mr. Darwin's writings have been so immense, that we shall not overstate them by saying that they are fully comparable with those which we have previously considered as having been exerted by the same writings on geology, botany, and zoology. This fact at first sight can scarcely fail to strike us as remarkable, in view of the consideration that Mr. Darwin was not only not himself a psychologist, but had little aptitude for, and perhaps less sympathy with, the technique of psychological method. The whole constitution of his mind was opposed to the subtlety of the distinctions and the mysticism of the conceptions which this technique so frequently involves; and therefore he was accustomed to regard the problems of mind in the same broad and general light that he regarded all the other problems of nature. But if at first sight we are inclined to feel surprised that, although possessing none of the special mental equipments of a psychologist, he should have produced so enormous an influence upon psychology, our surprise must vanish when we consider the matter a little more attentively. For the truth of this matter is that psychology, in being the science furthest removed from the reach of experimental means and inductive method, is the science which has longest remained in the trammels of *a priori* analysis and metaphysical thought; therefore Darwin, by casting the eye of a philosophical naturalist upon the facts, without reference to the cobwebs which the specialists had woven around them, was able to gather directly much new information as to their meaning. And the rare sagacity with which he observed and reflected upon the phenomena of mind merely as phenomena or facts of nature, led to the remarkable results which we shall presently have to consider—results which have done more than any other to unmuffle the young science of psychology from the swaddling clothes of its mediæval nursery.

The portions of Mr. Darwin's writings which refer to mental science are very limited in extent—comprising, in fact, only one chapter in the "Origin of Species," three in the "Descent of Man," and a short paper on the development of infantile intelligence. The importance of the effect produced by them is therefore rendered all the more remarkable; but in this connection it seems desirable to state that the chapters to which we have alluded represent, in an exceedingly condensed form, the result of extensive thought and reading. A year or two ago Mr. Darwin lent the present writer the original drafts of these essays, together with all the notes and memoranda which he had collected on psychological subjects during the previous forty years, and so we can testify that any one who reads these MSS. is more likely to be surprised at the amount of labour which they indicate than at the effect which has been produced by the compressed publication of its results. What strikes one most in reading the MSS. is that which also strikes one most in reading the published *résumé* that has grown out of

them—namely, the honest adherence throughout to the strictly scientific, or, as the followers of Comte would say positive method of seeking and interpreting facts; speculation, hypothesis, and straw-splitting are everywhere, not so much intentionally avoided, as alien to the whole conception of the manner in which the sundry problems are to be attacked. We all know that this conception has not met with universal approval—that more than one writer, adhering to the traditional methods of psychological inquiry, has expressly joined issue upon it. But although it is an easy matter for a technical psychologist to point to an absence of technical thought, and so of a recognition of technical principles, in these parts of Mr. Darwin's writings, we are persuaded that the *exposé* only serves to reveal a beam in the eye of the technical psychologist which prevents him from seeing clearly how to remove the mote from Mr. Darwin's. In other words, although it is true that Mr. Darwin does not recognise the niceties of distinction which seem so important to what we may term the professional mind, it is no less true that in the cases to which we have alluded, the professional mind has failed in its duty of filling up for itself the technical *lacune* in Mr. Darwin's expositions. Such *lacune* no doubt occur, but they never really vitiate the integrity of the conclusions; and a trained psychologist would best fulfil his function as an under-builder, by supplying here and there the stones which the hand of the master has neglected to put in. To ourselves it always seems one of the most wonderful of the many wonderful aspects of Mr. Darwin's varied work, that by the sheer force of some exalted kind of common sense, unassisted by any special acquaintance with psychological methods, he should have been able to strike, as it were, straight down upon some of the most important truths which have ever been brought to light in the region of mental science. These we shall now proceed to consider.

The chapter in the "Origin of Species" to which we have referred, is occupied chiefly with an application of the theory of natural selection to the phenomena of instinct, and in our opinion it has done more than all other psychological writings put together to explain what instinct is, why it is, and how it came to be. Before this chapter was published, the only scientific theory concerning the origin of instincts that had been formed was the theory which regarded them as hereditary habits. Because we know that in the individual intelligent adjustments become, by frequent repetition, automatic, it was inferred that the same might be true of the species, and therefore that all instincts were to be regarded as what Lewes has aptly termed "lapsed intelligence." In this view there is, without any question, much truth, and the first thing we have to notice about Mr. Darwin's writings with reference to instinct is that they not only recognised this truth, but, by elucidating the whole subject of heredity, placed it in a much clearer light than it ever stood before. Mr. Darwin, however, carried the philosophy of the subject very much further when he argued that, in conjunction with the cause formulated as "lapsing intelligence," there was another at least as potent in the formation of instincts—namely, natural selection. His own statement of the case is so terse that we cannot do better than quote it.

\* Concluded from p. 147.

years with wonderfully little practice, had played a tune with no practice at all, he might truly be said to have done so instinctively. But it would be a serious error to suppose that the greater number of instincts have been acquired by habit in one generation, and then transmitted by inheritance to succeeding generations. It can be clearly shown that the most wonderful instincts with which we are acquainted, namely, those of the hive-bee and of many ants, could not possibly have been acquired by habit.<sup>1</sup>

"It will be universally admitted that instincts are as important as corporeal structures for the welfare of each species, under its present conditions of life. Under changed conditions of life, it is at least possible that slight modifications of instinct might be profitable to a species; and if it can be shown that instincts do vary ever so little, then I can see no difficulty in natural selection preserving and continually accumulating variations of instinct to any extent that was profitable. It is thus, I believe, that all the most complex and wonderful instincts have originated."

Briefly, then, in Mr. Darwin's view instincts may arise by lapsing intelligence, by natural selection of accidental and possibly non-intelligent variations of habit, or by both principles combined—seeing that "a little dose of judgment" is often commingled with even the most fixed (or most strongly inherited) instincts. One good test of the truth of the view as a whole is that which Mr. Darwin has himself supplied—namely, searching through the whole range of instincts to see whether any occur which are either injurious to the animals exhibiting them, or beneficial only to other animals. Now there is really no authentic case of the former, and the latter are so few in number that they may reasonably be regarded, either as rudiments of instincts once useful (so analogous to the human tail), or as still useful in some unobservable manner (so analogous to the tail of the rattlesnake). The case of aphides secreting honey-dew for the benefit of ants occurred to Mr. Darwin as one which might be adduced against his theory in this connection, and he therefore made some experiments upon the subject, which led him to conclude that "as the excretion is extremely viscid, it is no doubt a convenience to the aphides to have it removed; therefore probably they do not excrete solely for the good of the ants."

A discussion of the variability of instinct, and of the probability that variations should be inherited, leads him to consider the important case of the apparent formation of artificial instincts in our domestic dogs by continued training with selection, and also the not less important case of the effects produced upon natural instincts by the long-continued change of environment to which other of our domestic animals have been exposed. All the facts adduced as resulting from these long-continued though unintentional experiments by man, go to substantiate, in a very unmistakable manner, the theory concerning the origin and development of instincts which we are considering. The chapter concludes with a close consideration of some of the more remarkable instincts which occur in the animal kingdom, such as the parasitic instinct of the cuckoo, the slave-making instinct of ants, and the cell-making instinct of bees. A flood of light is thrown

<sup>1</sup> Because the individuals which exhibit them, being neuters, can never have progeny. It is indeed surprising, as Mr. Darwin further on observes, that no one previously "advanced this demonstrative case of neuter insects against the well-known doctrine of inherited habit as advanced by Lamarck."

upon the latter, and the old-standing problem as to how the bees have come to make their cells in the form which requires the smallest amount of material for their construction, while affording the largest capacity for purposes of storage, is solved.

From this brief account of the chapter on "Instinct," it is evident that the new idea which it starts, and in several directions elaborates, is an idea of immense importance to psychology, and that the broad marks or general principles laid down by it afford large scope for a further filling in of numberless details by the attentive observation of facts. The phenomena of instinct, indeed, cease to be rebellious to explanation, and range themselves in orderly array under the flag of science.

But not less important than the chapter on "Instinct" are the chapters in the "Descent of Man" on the mental powers of man as compared with those of the lower animals, on the moral sense, and on the development of both during primæval and civilised times. Our estimate of the value of these chapters is so high that we gladly endorse the opinion of the late Prof. Clifford—who was no mean judge upon such matters—when he writes of them as presenting to his mind "the simplest, and clearest, and most profound philosophy that was ever written upon this subject." As the three chapters together cover only 80 pages, it seems needless to render an abstract of them, so we shall only observe that although it is easy to show in them, as Mr. Mivart and others have shown, a want of appreciation of technical terms, and even of Aristotelian ideas, nowhere in the whole range of Mr. Darwin's writings is his immense power of judicious generalisation more conspicuously shown. So much is this the case that in studying these chapters we have ourselves always felt glad that Mr. Darwin was not the specialist in psychology which some of his critics seem to suppose that he ought to have been if he presumed to shake their science to its base; had he been such a specialist the great sweep of his thought might have been hindered by comparatively immaterial details.

Of the three chapters which we are considering, the most important is the one on the moral sense. As he himself says:—

"This great question (the origin of the moral sense) has been discussed by many writers of consummate ability; and my only excuse for touching upon it, is the impossibility of here passing it over; and because, so far as I know, no one has approached it exclusively from the side of natural history. The investigation possesses, also, some independent interest, as an attempt to see how far the study of the lower animals throws light on one of the highest psychical faculties of man."

The result of this investigation and study has been to give, if not a new point of departure to the science of ethics, at least a completely new conception as to the origin of the faculties with which that science has to deal; and without attempting to discuss the objections which have been raised against the doctrine, or to enumerate the points of contact between this doctrine and older ethical theories—to neither of which undertakings would our present space be adapted—we may say in general that, as in the case of instinct, so in that of conscience, we feel persuaded that Mr. Darwin's genius has been the first to bring within the grasp of human understanding

large classes of phenomena which had been previously wholly unintelligible.

"The Expression of the Emotions in Man and Animals" is an essay which may be more suitably mentioned in the present article than in any of the preceding. The work is a highly interesting one, not only on account of its philosophical theories, but also as an extensive accumulation of facts. "The three chief principles" enunciated by the former are: (1) "the principle of serviceable associated habits"; (2) "the principle of antithesis"; and (3) "the principle of actions due to the constitution of the Nervous System, independently from the first of the Will, and independently to a certain extent of Habit." It is shown that the first of these principles leads to the performance of actions expressive of emotions because "certain complex actions are of direct or indirect service under certain states of mind, in order to relieve or gratify certain sensations, desires, &c.; and whenever the same state of mind is induced, however feebly, there is a tendency through the force of habit and association for the same movements to be performed, though they may not then be of the least use." The second principle arises because, "when a directly opposite state of mind is induced, there is a strong and involuntary tendency to the performance of movements of a directly opposite nature, though these are of no use; and such movements are in some cases highly expressive." And the third principle occurs because "when the sensorium is strongly excited, nerve-force is generated in excess, and is transmitted in certain definite directions, depending on the connection of the nerve-cells, and partly on habit." All these principles are more or less well substantiated by large bodies of facts, and although the essay, from the nature of its subject-matter, is necessarily not of so transforming a character in psychology as those which we have already considered, and although we may doubt whether it gives a full explanation of every display of expressive movement, we think there can be no reasonable question that the three principles above quoted are shown to be true principles, and therefore that the essay is completely successful within the scope of its purposes.

Lastly, we have to allude to the brief paper published in *Mind* on the psychogenesis of a child. These notes were not published till long after they were taken, so that Mr. Darwin was the first observer, by many years, in a department of psychology which—owing chiefly to the attention which his other writings have directed to the phenomena of evolution—is now being very fully explored. The observations relate entirely to matters of fact, and display the same qualities of thoughtfulness and accuracy which are so conspicuous in all his other work.

On the whole, then, we must say that Mr. Darwin has left as broad and deep a mark upon Psychology as he has upon Geology, Botany, and Zoology. Groups of facts which previously seemed to be separate, are now seen to be bound together in the most intimate manner; and some of what must be regarded as the first principles of the science, hitherto unsuspected, have been brought to light. No longer is it enough to say that such and such actions are the result of instinct, and so beyond the reach of explanation; for now the very thing to be explained is the character and origin of the instinct—the causes which led to

its development, its continuance, its precision, and its use. No longer is it enough to consider the instincts manifested by an animal, or group of animals, as an isolated body of phenomena, devoid of any scientific meaning because standing out of relation to any known causes; for now the whole scientific import of instincts as manifested by one animal depends on the degree in which they are connected by general principles of causation with the instincts that are manifested by other animals. And not only in respect of instincts, but also in respect of intelligence, the science of comparative psychology may be said for the first time really to have begun with the discovery of the general causes in question; while from the simplest reflex actions, up to the most recondite processes of reason and the most imperious dictates of conscience, we are able to trace a continuity of development. A revelation of truth so extensive as this in the department of science which, in most nearly touching the personality of man, is of most importance for man to explore, cannot fail to justify the anticipations of the revealer, who in referring to psychology, could "in the future see open fields for far more important researches" than those relating to geology and biology. If the proper study of mankind is man, Mr. Darwin has done more than any other human being to further the most desirable kind of learning, for it is through him that humanity in our generation has first been able to begin its response to the precept of antiquity—*know thyself*.

The series of brief articles whereby we have endeavoured to take a sort of bird's eye view of Mr. Darwin's great and many labours have now drawn to a close. But we cannot finish this very rudimentary sketch of his work without alluding once more to what was said in the opening paragraphs of the series, and which cannot be more tersely repeated than in Mr. Darwin's own words there quoted with reference to Prof. Henslow:—"Reflecting over his character with gratitude and reverence, his moral attributes rise, as they should do in the highest character, in pre-eminence over his intellect."

In the gratitude and reverence which we feel in a measure never to be expressed, we sometimes regret that the ill-health which led to his seclusion prevented the extraordinary beauty of his character from being more generally known by personal intercourse. True it is that the world has shown in a wonderful degree a just appreciation of this character, so that many thousands in many nations who had never even seen the man heard that Charles Darwin was dead with a shock like that which follows such an announcement in the case of a well-loved friend; still it seems almost sad that when such an exalted character has lived, it should only have been to so comparatively few of us that the last farewell over the open grave at Westminster implied a severance of feelings which had never been formed before, and which, while ever living among the most hallowed lights of memory, we know too well can never be formed again. But to those of us who have now to mourn so unspeakable a loss, it is some consolation to think, while much that was sweetest and much that was noblest in our lives has ended in that death, his great life and finished work still stand before our view; and in regarding them we may almost bring our hearts to cry—Not for him, but for ourselves, we weep.